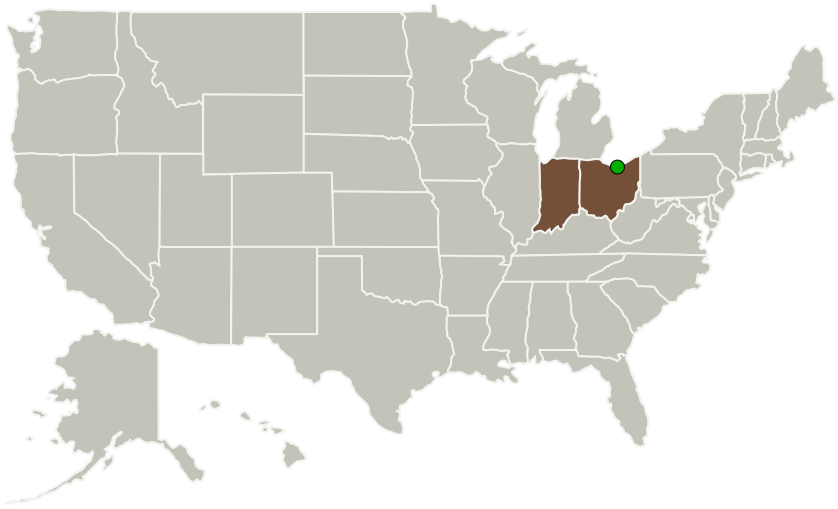
A Simple, Robust Lightweight Microscopy and Sample Processing System for Scientific and Commercial Research on ISS, Phase I

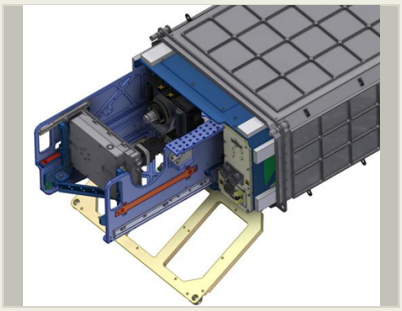
Completed Technology Project (2014 - 2014)

Project Introduction

A light-weight, user-friendly, algorithmically or remotely controlled microscope, not purchased from a microscope company, coupled to fluid sample processing and sample changing systems is proposed. It is an easy-access light microscope consisting of a novel illuminator-condenser with no moving parts, a sample-processing remotely controlled translating stage using hollow slides, a high-definition color video camera, including multiparameter image processing and analysis. This system will be especially useful when the U. S. Light Microscopy Module on ISS is out of service in 2017-2018. In phase I research Techshot will produce a functioning laboratory prototype of this system by meeting the following technical objectives (1) Determine the detailed requirements of identified ISS microscopy users and implement these requirements in a design, (2) Build a laboratory prototype of the microscopy system installed in an EXPRESS locker insert, and (3) Operate the laboratory prototype for at least three ISS user experimenters. The tested prototype will serve as the basis for Phase II research, in which a version designed for space flight will be built and tested.

Primary U.S. Work Locations and Key Partners





A simple, robust lightweight microscopy and sample processing system for scientific and commercial research on ISS Project Image

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Organizations Performing Work	Role	Type	Location
Techshot, Inc.	Lead Organization	Industry	Greenville, Indiana
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Indiana	Ohio

Project Transitions

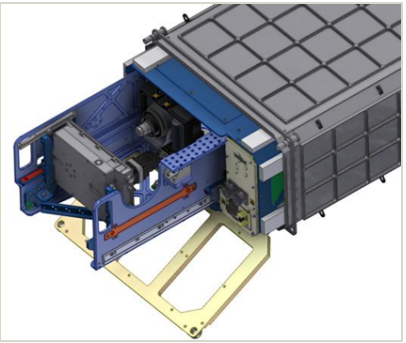
June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137569)*

Images



Project Image
A simple, robust lightweight microscopy and sample processing system for scientific and commercial research on ISS Project Image *(https://techport.nasa.gov/image/128279)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Techshot, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

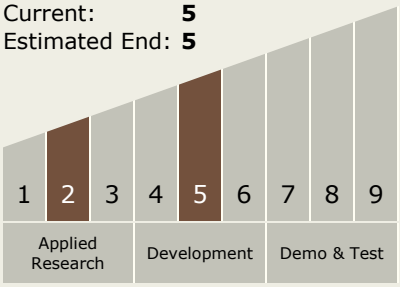
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Michael Kurk

Technology Maturity (TRL)

Start: **2**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.3 Optical Components

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System